«Metrological Support of Innovative Technologies»
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«Development of an application of a pipeline network calculation»

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The main stages of development of a pipe network calculation application at the coding level in C# language are presented. Databases are implemented by Microsoft SQL Server. Visual Studio was used as an integrated development environment for code writing, as well as a rich set of control elements written using .NET Framework. The necessary solutions for the task was developed after complementing the functionality of these code control elements.
## Oil transport.

<table>
<thead>
<tr>
<th>Type of transport</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pipeline</td>
<td>Pipelines are commonly used. They are not energy-intensive and have a lower carbon footprint.</td>
</tr>
<tr>
<td>Rail transport</td>
<td>Rail transport has low capital costs, but low speed, carbon emissions and accidents.</td>
</tr>
<tr>
<td>Truck tank</td>
<td>It is the limited method of oil transportation due to storage capacity, but truck tanks have the greatest flexibility for many directions of oil delivery.</td>
</tr>
<tr>
<td>Water transportation</td>
<td>It is the cheapest way of oil transport (Compared to the pipeline, barges are cheaper by 20-35% depending on the route). A disadvantage is the speed.</td>
</tr>
</tbody>
</table>
“Menu” form.

- Gas (compressor)
- Newtonian liquids (pump)
- Non-Newtonian liquids (pump)

Implementing the transition between forms.

```csharp
private void button1_Click(object sender, EventArgs e)
{
    Hide();
    Gas10 Gas = new Gas10();
    Gas.ShowDialog();
    Close();
}
```
“Gas10” form (Data input form for the calculation of the pipeline network (gas)).
KeyPress

“Doubler” function

Output of the results of solving the problem
Data input form for pipeline network calculation (liquid).
Conclusions

Results, implementation

• The calculation result is the selection of the pump and compressor taking into account the maximum period of trouble-free operation.

• The obtained results are the basis of the code for the expert control complex with controlled parameters of transport, both liquid and gas.
Contacts

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